

# THE BOLETACEAE OF NORTH AMERICA—I

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The Boletaceae are fleshy tube-bearing fungi, terrestrial for the most part, and, with one or two exceptions, centrally stipitate. They differ from the Polyporaceae chiefly in their fleshy consistency and terrestrial habit. Most of them are edible, but a few species are said to be distinctly poisonous.

The family shows few lines of cleavage, although a number of genera have been proposed since Linnaeus included all tube-bearing fungi in the single genus *Boletus*. S. F. Gray, in 1821, divided the group into three genera, *Suillus*, *Pinuzza* and *Leccinum*. *Strobilomyces* was separated by Berkeley in 1860, and *Boletinus* by Kalchbrenner in 1877. More recently, Karsten, Quélet, and Patouillard have each originated or adopted a system of classification for the group involving a number of genera, which will be discussed in their proper order in the following pages.

## Synopsis of the North American Genera

Tubes arranged in radiating rows.

Stipe annulate.

1. *Boletinus*.

Stipe exannulate.

2. *Boletinellus*.

Tubes not arranged in radiating rows.

Stipe either glandular-dotted or annulate.

Stipe annulate, glandular-dotted in some species.

Spores brownish-black, rough, subglobose.

3. *Strobilomyces*.

Spores ochraceous to yellowish-brown, smooth, usually oblong-ellipsoid.

Sporophore covered with a conspicuous yellow powder.

4. *Pulveroboletus*.

Sporophore not covered with a yellow powder.

Pileus floccose-verrucose, dry.

5. *Boletellus*.

Pileus smooth, viscid.

6. *Boletus*.

Stipe glandular-dotted, exannulate.

7. *Rostkovites*.

Stipe neither glandular-dotted nor annulate.

Spores hyaline, often becoming yellowish; stem hollow, not reticulated.

8. *Gyroporus*.

Spores rosy or flesh-colored; stem solid, usually reticulated.

9. *Tylopilus*.

Spores ochraceous to yellowish-brown.

Mouths of tubes red or reddish-brown, tubes yellowish within.

10. *Suillellus*.

Mouths of tubes never uniformly red nor reddish-brown, tubes unicolorous.

11. *Ceriumyces*.

I. BOLETINUS Kalchbr. Icon. Sel. Hymen. Hung. 4: 52.

pl. 31. 1877

*Euryporus* Quél. Ench. Fung. 163. 1886. (Type species, *Euryporus cavipes* (Opat.) Quél.)

*Boletopsis* P. Henn. Engl. & Prantl, Natur. Pflanz. 1<sup>1\*\*</sup>: 194. 1899. Metonym.

Hymenophore annual, terrestrial or rarely epixyloous, centrally stipitate; surface dry, minutely silky to fibrillose or squamose: context whitish or yellowish, fleshy or spongy; tubes large, shallow, elongated, tough, not easily separating, radiately arranged, adnate or slightly decurrent, yellowish, covered with a veil: spores elongated, smooth, yellowish-brown to purplish-brown, sometimes with greenish tints: stipe more or less annulate, spongy or hollow within.

Type species, *Boletus cavipes* Opat.

Stipe hollow; pileus tawny-brown, fibrillose-squamulose. 1. *B. cavipes*.

Stipe solid.

Pileus whitish or grayish, slightly squamulose.

2. *B. grisellus*.

Pileus yellow or yellowish.

Pileus 5 cm. or less broad.

3. *B. Berkeleyi*.

Pileus 10 cm. or more broad.

4. *B. appendiculatus*.

Pileus red or reddish, conspicuously squamose.

Spores purplish-brown; scales scattered.

5. *B. spectabilis*.

Spores ochraceous-brown; scales dense.

6. *B. pictus*.

I. BOLETINUS CAVIPES (Opat.) Kalchbr. Icon. Sel. Hymen. Hung.

52. pl. 31. 1877

*Boletus cavipes* Opat. Comm. de fam. fung. Bolet. 11. 1836.

*Boletus ampliporus* Peck, Ann. Rep. N. Y. State Mus. 26: 67. 1874. (Type from North Elba, New York.)

This species occurs sparingly in this country in New England and New York, usually in swamps or damp mossy places. It was at first referred to *B. subtomentosus* by Peck.

2. BOLETINUS GRISELLUS Peck, Mem. N. Y. State Mus. 3:  
169. *pl* 52. *f.* 13-19. 1900

This rare species was described from specimens collected by Morris at Natick, Ellis, and Waltham, Massachusetts. It grows under or near tamarack trees, and develops late in the season.

3. **Boletinus Berkeleyi** nom. nov.

*Boletus decipiens* B. & C. Ann. Mag. Nat. Hist. II. 12: 430.  
1853. Not *Boletus decipiens* Schrad. 1794.

*Boletinus decipiens* Peck, Bull. N. Y. State Mus. 2: 78. 1889.

This species occurs in thin woods along the Atlantic seaboard from New Jersey to Florida. The central stem and much broader, ochraceous-ferruginous spores distinguish it from *B. merulioides* in dried plants where the veil may be inconspicuous.

4. BOLETINUS APPENDICULATUS Peck, Bull. Torrey Club 23:  
418. 1896

Only a single pileus remains of the type specimen collected by Yeomans under fir trees in Washington, D. C. Peck's description is as follows:

"Pileus fleshy, convex, glabrous, ochraceous-yellow, the margin appendiculate with an incurved membranous veil, flesh pale-yellow, unchangeable; tubes rather small, yellow, their mouths angular, unequal, becoming darker or brownish where wounded; stem solid, slightly thickened at the base, yellow; spores pale-yellow, oblong, .0004 to .0005 in. long, about .00016 broad; pileus 4 to 8 in. broad; stem 2 to 3 in. long, 4 to 6 lines thick."

5. BOLETINUS SPECTABILIS Peck, Ann. Rep. N. Y. State  
Mus. 23: 128. *pl.* 6. *f.* 1-3. 1872

This showy species occurs sparingly in exposed northern swamps in Canada and the northern United States from New England and New York to Wisconsin. The pileus is adorned with conspicuous red scales; the flesh and tubes are yellow, the latter soon colored darker by the purplish-brown spores.

6. BOLETINUS PICTUS Peck, Bull. N. Y. State Mus. 2: 77.  
1889

*Boletus pictus* Peck, Ann. Rep. N. Y. State Mus. 23: 128.  
1872.

*Boletus Spraguei* B. & C. Grevillea 1: 35. 1872. (Type from New England.)

This beautiful species, described from New York by Peck, is rather common in the woods and mossy swamps of the mountainous regions of the eastern United States and Canada. It is distinguished from *B. spectabilis* by its lighter-colored spores and the denser covering of reddish, fibrillose scales on the surface of its cap.

#### DOUBTFUL SPECIES

*Boletinus borealis* Peck, Bull. Torrey Club 22: 206. 1895. Described from dried specimens collected by Waghorne on Capstan Island, Labrador. The types at Albany resemble *B. caviipes*.

#### 2. *Boletinellus* gen. nov.

Hymenophore annual, terrestrial or sometimes attached to buried roots, pileus circular, varying to dimidiate at times; surface dry, minutely tomentose to floccose-tomentose: context white or yellowish, fleshy; tubes decurrent, large, shallow, elongated, not easily separating, radiating, yellow, not covered with a veil: spores ellipsoid, smooth, some shade of brown: stipe central, eccentric or lateral, solid, fleshy or spongy.

Type species, *Boletinus porosus* Peck.

Stem eccentric or lateral; pileus reddish-brown, glabrous or minutely tomentose.

1. *B. merulioides*.

Stem central.

Pileus dark chestnut, subtomentose.

2. *B. castanellus*.

Pileus bright red, floccose-tomentose.

3. *B. paluster*.

#### 1. *Boletinellus merulioides* (Schw.)

*Daedalea merulioides* Schw.; Proc. Acad. Sc. Phila. 4: 160. 1832.

*Paxillus porosus* Berk.; Lea, Cat. Cinn. Plants 54. 1849.

*Boletus lateralis* Bundy, Geol. Wisc. 1: 398. 1883.

*Boletinus porosus* Peck, Bull. N. Y. State Mus. 2: 79. 1889.

This species is well known throughout the eastern United States from Canada to Alabama and as far west as Wisconsin. It occurs gregariously in low wet places, especially about stumps and decaying roots, where there is partial shade. In the speci-

men described by Schweinitz the stipe was reduced to a mere tubercle and the pileus was dimidiate in shape.

### 2. *Boletinellus castanellus* (Peck)

*Boletinus castanellus* Peck, Bull. Torrey Club 27: 613. 1900.  
(Type from New Jersey.)

This species, the type of which I have not seen, was described as follows from specimens collected by Mr. E. B. Sterling in New Jersey:

"Pileus convex or nearly plane, dry, subtomentose, soft, spongy, dark chestnut, flesh whitish or yellowish-white; tubes nearly plane in the mass, adnate or slightly decurrent, brown, their mouths large, angular; stem short, solid, glabrous, colored like the pileus, whitish or grayish within, slightly reticulate at the top; spores 7.5-10  $\mu$  long, about 5  $\mu$  broad.

"Pileus 2.5-4 cm. broad; stem about 2.5 cm. long, 4-8 mm. thick."

### 3. *Boletinellus paluster* (Peck)

*Boletus paluster* Peck, Ann. Rep. N. Y. State Mus. 23: 132.  
pl. 6. f. 4-7. 1872. (Type from North Elba, New York.)

*Boletinus paluster* Peck, Bull. N. Y. State Mus. 2: 78. 1889.

This attractive little species occurs in wet places, usually among moss, and is readily known by its brilliant color and the entire absence of an annulus. It has been collected in Ontario, Maine, Massachusetts, New York, and New Jersey.

### 3. STROBILOMYCES Berk. Outl. Brit. Fung. 236. 1860

*Eriocorys* Quél. Ench. Fung. 163. 1886. (Type species, *Eriocorys strobilacea* (Scop.) Quél.)

Hymenophore annual, terrestrial, centrally stipitate; surface of pileus and stipe blackish and shaggy; context white, at first fleshy, becoming tough; tubes angular, adnate, white when young, covered with a floccose veil; spores globose or broadly ellipsoid, rugulose, blackish-brown; stipe solid, not reticulate.

Type species, *Strobilomyces strobilaceus* (Scop.) Berk.

### I. STROBILOMYCES STROBILACEUS (Scop.) Berk. Outl. Brit. Fung. 236. 1860

*Boletus strobilaceus* Scop. Anni Hist. Nat. 4: 148. pl. 1. f. 5.  
1770.

*Boletus squarrosus* Pers. Myc. Eur. 2: 145. pl. 19. 1825.

*Boletus coniferus* Pers. Myc. Eur. 2: 146. 1825.

*Boletus strobiliformis* Dicks. Crypt. 1: 17. pl. 3. f. 2. 1785.

*Boletus stygius* Wallr. Fl. Crypt. 4: 608. 1833.

*Eriocorys strobilacea* Quél. Ench. Fung. 163. 1886.

This common edible species is easily known by its black color and shaggy appearance. Its flesh is white, changing to reddish and finally to black when wounded. It is abundant on shaded banks in woods throughout Europe, Canada, and the United States.

#### DOUBTFUL SPECIES

*Boletus coccineus* Fries, Epicr. Myc. 423. 1838. Not *Boletus coccineus* Bull. 1791. This species, of doubtful affinities and doubtful locality, is based upon a brief description and a figure (Plum. Fil. Amer. pl. 167. f. A.A.). It is placed by Saccardo in the genus *Strobilomyces*.

#### 4. *Pulveroboletus* gen. nov.

Hymenophore annual, terrestrial, centrally stipitate; surface of pileus and stipe clothed with a conspicuous sulphur-yellow, powdery tomentum, which may be the remains of a universal veil: context white, fleshy; tubes adnate, yellowish, covered with a large veil: spores oblong-ellipsoid, ochraceous-brown: stipe solid, annulate, not reticulate.

Type species, *Boletus Ravenelii* B. & C.

##### 1. *Pulveroboletus Ravenelii* (B. & C.)

*Boletus Ravenelii* B. & C. Ann. Mag. Nat. Hist. II. 12: 429. 1853.

This beautiful and interesting species was first described from the collections of Ravenel in South Carolina, and has since been collected in many of the eastern states from New England to the Gulf of Mexico. It differs from most other higher fungi in preferring deep shade, being often found in dense thickets of *Kalmia* and *Rhododendron*. The conspicuous veil and the yellow powder which covers the entire sporophore will readily distinguish this species.

#### 5. *Boletellus* gen. nov.

Hymenophore annual, epixylous, centrally stipitate; surface floccose-verrucose, yellowish: context light-colored, fleshy; tubes

angular, depressed, yellowish, covered with a veil: spores oblong-ellipsoid, smooth, ferruginous: stipe solid, white, not reticulate.

Type species, *Boletus Ananas* Curtis.

### 1. *Boletellus Ananas* (Curtis)

*Boletus Ananas* Curtis, Am. Jour. Sci. & Arts, II. 6: 351. 1848.

*Boletus isabellinus* Peck, Bull. Torrey Club 24: 146. 1897.

(Type from Mississippi.)

The characters of the genus will readily distinguish this species. It was for a long time known only from the Carolinas, but has more recently been collected many times in Alabama and Mississippi by Professor and Mrs. F. S. Earle, and once in Georgia by Dr. R. M. Harper. According to Professor Earle it always occurs either as a wound parasite on pine trunks or about the base of living pine trees. *Boletus isabellinus* Peck was described from undeveloped specimens.

### 6. BOLETUS (Dill.) L. Sp. Pl. 1177. 1753

*Tubiporus* Paul. Traité Champ. pl. 166 (bis.). 1812-1835.

(Type species, *Tubiporus annulatus* (Bull.) Paul.)

*Suillus* Poir. Encycl. Méth. Bot. 7: 496. 1806. (Type species, *Suillus annulatus* Poir.)

*Pinuzza* S. F. Gray, Nat. Arr. Brit. Pl. 1: 646. 1821. (Type species, *Boletus flavus* Bolt.)

*Cricunopus* Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881. (Type species, *Cricunopus luteus* (L.) Karst.)

*Viscipellis* Quél. Ench. Fung. 155. 1886. (Type species, *Viscipellis sphaerocephala* (Barla) Quél.)

Hymenophore annual, terrestrial, centrally stipitate; surface viscid, glabrous: context fleshy, white or yellowish; tubes adnate, small, angular, yellowish, covered with a whitish veil: spores oblong-ellipsoid, or rarely globose, smooth, yellowish-brown: stipe solid, annulate, often glandular-dotted.

Type species, *Boletus luteus* L.

Stem glandular-dotted.

Stem not at all reticulate.

Stem reticulate above the annulus.

Stem not glandular-dotted.

Spores globose or subglobose.

Spores oblong-ellipsoid.

1. *B. luteus*.

2. *B. amabilis*.

3. *B. sphaerosporus*.

4. *B. Clintonianus*.

## 1. BOLETUS LUTEUS L. Sp. Pl. 1177. 1753

*Boletus annulatus* Pers. Syn. Fung. 503. 1801.

*Tubiporus annulatus* Paul. Traité Champ. pl. 166 (bis). 1812-1835.

*Boletus Elbensis* Peck, Ann. Rep. N. Y. State Mus. 23: 129. 1872. (Type from Elba, New York.)

*Boletus salmonicolor* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 100. 1874. (Type from Vermont.)

*Cricunopus luteus* Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881.

*Viscipellis luteus* Qué. Ench. Fung. 155. 1886.

*Boletus subluteus* Peck, Bull. N. Y. State Mus. 1<sup>2</sup>: 62. 1887. (Type from New York.)

*Ixocomus luteus* Qué. Fl. Myc. Fr. 414. 1888.

*Boletus acidus* Peck, Bull. N. Y. State Mus. no. 105: 15. pl. T. f. 1-6. 1906. (Type from Port Henry, New York.)

This species is well known and widely distributed, occurring commonly in sandy soil in coniferous or mixed woods throughout the eastern United States and Europe, and probably extending around the globe in temperate regions. The cap is smooth, yellowish-brown, and very viscid; the tubes and stem are yellow, the latter glandular-dotted and also provided with a large annulus, which is the chief character distinguishing it from *R. granulatus*.

## 2. BOLETUS AMABILIS Peck, Bull. Torrey Club 27: 612. 1900

Described from specimens collected by Bartholomew in dense spruce woods in Colorado. The cap is glabrous, reddish-tawny, and probably viscid when fresh; the tubes short, yellow, somewhat radiating, and decurrent; and the stem subequal, paler than the cap, and reticulate above the small whitish annulus. No. 340 of Clements' Crypt. Form. Colorad., distributed as "*Boletus bovinus unicolor* (Frost)," may be this species, but I have not seen satisfactory material of it, nor have I seen the type of *B. amabilis*.

## 3. BOLETUS SPHAEROSPORUS Peck, Bull. Torrey Club 12: 33. 1885

This rare species was described from material collected near Madison, Wisconsin, by Trelease. It is known to occur also



in Iowa and Minnesota, being found in low ravines and sandy places in woods, and occasionally about stumps. The sheathing annulus is very characteristic, as are the globose spores, both characters being very rare among the Boletaceae.

4. *BOLETUS CLINTONIANUS* Peck, Ann. Rep. N. Y. State Mus.  
23: 128. pl. 5. f. 1-5. 1872

*Boletus viridarius* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 100.  
1874. (Type from Vermont.)

*Boletus serotinus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 100.  
1874. (Type from Vermont.)

This rather rare species was described from North Elba, New York, and is to be looked for in shaded grassy places in the northeastern United States and Canada. I have collected it twice in central Maine and once in Newfield, New Jersey, the latter collection being made as late as October 25. It is readily distinguished from its congeners of the eastern United States by the absence of glandular dots on the stem.

7. *ROSTKOVITES* Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881

Hymenophore annual, terrestrial, centrally stipitate; surface viscid, glabrous or hirtellous: context fleshy, yellowish; tubes adnate, angular, yellow, not covered with a veil, exuding viscid drops which blacken on drying: spores oblong-ellipsoid, smooth, yellowish-brown: stipe solid, glandular-dotted, exannulate, not reticulate.

Type species, *Rostkovites granulatus* (L.) Karst.

Pileus glabrous or nearly so.

Pileus brown when moist, yellowish on drying; stem  
over 8 mm. in diameter. 1. *R. granulatus*.

Pileus yellow, often streaked with bright red; stem  
usually slender, 8 mm. or less in diameter. 2. *R. Americanus*.

Pileus adorned with conspicuous tufts of hairs. 3. *R. hirtellus*.

- I. *ROSTKOVITES GRANULATUS* (L.) Karst. Rev. Myc. 3<sup>o</sup>: 16.  
1881

*Boletus granulatus* L. Sp. Pl. 1177. 1753.

*Boletus circinans* Pers. Tent. Disp. Meth. Fung. 27. 1797.

*Boletus lactifluus* With. Arr. Brit. Pl. ed. 4. 4: 314. 1801.

*Leccinum lactifluum* S. F. Gray, Nat. Arr. Brit. Pl. 1: 647.  
1821.

*Boletus collinitus* Peck, Ann. Rep. N. Y. State Mus. 23: 129.  
1872.

*Boletus albus* Peck, Ann. Rep. N. Y. State Mus. 23: 130. 1872.  
(Type from the Adirondacks, New York.)

*Boletus viscosus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 101.  
1874. (Type from Vermont.) Not *B. viscosus* Venturi.

*Boletus punctipes* Peck, Ann. Rep. N. Y. State Mus. 32: 32.  
1879. (Type from Gansevoort, New York.)

*Boletus brevipes* Peck, Ann. Rep. N. Y. State Mus. 38: 110.  
1885.

*Viscipellis granulata* Quél. Ench. Fung. 156. 1886.

*Ixocomus granulatus* Quél. Fl. Myc. Fr. 412. 1888.

This species is common in Europe and throughout the United States and Canada, occurring in scattered groups in open woods, especially under or near pine trees. The surface of the cap is very viscid and usually of a brownish color when moist, becoming yellow on partial drying; the stem and tubes are yellowish, and exude viscid dots which become black on drying. There is an albino form, to which Peck gave the name *Boletus albus*. In *Boletus viscosus* of Frost, the stem is rather shorter than usual, a character which Peck kept in mind when he rechristened the species *Boletus brevipes*.

## 2. *Rostkovites subaureus* (Peck)

*Boletus subaureus* Peck, Ann. Rep. N. Y. State Mus. 39: 42.  
1886. (Type from Day, New York.)

*Boletus Americanus* Peck, Bull. N. Y. State Mus. 1<sup>2</sup>: 62. 1887.  
(Type from New York.)

*Boletus flavidus* Peck, Ann. Rep. N. Y. State Mus. 23: 129.  
1872.

This species resembles *R. granulatus* in appearance and also in habitat. It does not occur in Europe, although it has very commonly been referred to *B. flavidus*. In its usual form, the cap is yellow and dotted or streaked with brilliant red, the stem being slender, yellow, and covered with reddish-brown, viscid dots which become black on drying. There are forms, however, which are distinguished with difficulty from *R. granulatus*.

3. *Rostkovites hirtellus* (Peck)

*Boletus hirtellus* Peck, Bull. N. Y. State Mus. 2: 94. 1889.  
(Type from New York.)

This rare species was at first confused by Peck with *R. sub-aureus*, but it is easily recognized by its hirtellous pileus. It is known to occur in sandy soil under pines in New York and Connecticut.

8. *GYROPORUS* QuéL. Ench. Fung. 161. 1886

*Suillus* Karst. Bidr. Finl. Nat. och Folk 37: 1. 1882. (Type species, *Suillus cyanescens* (Bull.) Karst.)

Hymenophore annual, terrestrial, centrally stipitate; surface dry, minutely tomentose to floccose-squamose: context white, less compact than in most members of the family and therefore drying more readily; tubes free, small, cylindrical, white, not covered with a veil: spores ellipsoid, smooth, white, at length pale-yellow: stipe soft and spongy within, usually becoming hollow.

Type species, *Gyroporus cyanescens* (Bull.) QuéL.

Flesh quickly changing to blue when wounded; pileus grayish-yellow, floccose.

1. *G. cyanescens*.

Flesh white, unchangeable; pileus reddish-brown, nearly glabrous.

2. *G. castaneus*.

1. *GYROPORUS CYANESCENS* (Bull.) QuéL. Ench. Fung. 161. 1886

*Boletus cyanescens* Bull. Herb. Fr. pl. 369. 1787.

*Boletus constrictus* Pers. Syn. Fung. 508. 1801.

*Leccinum constrictum* S. F. Gray, Nat. Arr. Brit. Pl. 647. 1821.

*Boletus lacteus* Lév. Ann. Sci. Nat. III. 9: 124. 1848.

*Suillus cyanescens* Karst. Bidr. Finl. Nat. och Folk 37: 1. 1882.

This is a very distinct species, easily known by the deep-blue color which its flesh and tubes assume when wounded. It occurs quite commonly in woods and open places throughout eastern Canada and the northern United States from Maine to Minnesota and south to North Carolina.

2. *GYROPORUS CASTANEUS* (Bull.) QuéL. Ench. Fung. 161. 1886

*Boletus castaneus* Bull. Herb. Fr. pl. 328. 1786.

*Suillus castaneus* Karst. Bidr. Finl. Nat. och Folk 37: 1. 1882.

This species is quite common in sandy soil in open woods throughout this country and Europe. It is one of the few boleti that dry easily, the same being true also of *G. cyanescens*.

9. TYLOPILUS Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881

*Dictyopus* Quél. Ench. Fung. 159. 1886. (Type species, *Dictyopus felleus* (Bull.) Quél.)

*Rhodoporus* Quél. Fl. Myc. Fr. 420. 1888. (Type species, *Rhodoporus felleus* (Bull.) Quél.)

Hymenophore annual, terrestrial or rarely epixylous, centrally stipitate; surface dry, glabrous or minutely tomentose; context white, fleshy, sometimes bitter; tubes small, angular, white, becoming flesh-colored from the spores, not covered with a veil; spores oblong-ellipsoid, smooth, rosy or flesh-colored, rarely inclining to ferruginous; stipe solid, even or reticulate.

Type species, *Tylopilus felleus* (Bull.) Karst.

Pileus yellow to brown.

Sporophore large; stipe 1 cm. or more thick.

Context decidedly bitter.

Context not bitter.

Sporophore usually small; stipe about 5 mm. thick, never reticulate.

Pileus black or blackish; tubes becoming blackish when wounded.

1. *T. felleus*.

2. *T. indecisus*.

3. *T. gracilis*.

4. *T. alboater*.

1. TYLOPILUS FELLEUS (Bull.) Karst. Rev. Myc. 3<sup>o</sup>: 16. 1881

*Boletus felleus* Bull. Herb. Fr. pl. 379. 1787.

? *Boletus modestus* Peck, Ann. Rep. N. Y. State Mus. 25: 81. 1873. (Type from New York.)

*Boletus ferrugineus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 104. 1874.

*Dictyopus felleus* Quél. Ench. Fung. 159. 1886.

*Rhodoporus felleus* Quél. Fl. Myc. Fr. 420. 1888.

This species is abundant and widely distributed both in this country and in Europe. Specimens have been frequently found over a foot in diameter. It is said to be poisonous.

2. *Tylopilus indecisus* (Peck)

*Boletus indecisus* Peck, Ann. Rep. N. Y. State Mus. 41: 76. 1888.

This species was described from Menands, New York, and has since been reported from New Jersey, Pennsylvania, Kentucky, and North Carolina. I have found it in several localities, usually in thin deciduous woods. Specimens referred to *B. alutarius* Fr. by American collectors probably belong in this category; but it is difficult to distinguish either species from *T. felleus*, except by taste.

3. *TYLOPILUS GRACILIS* (Peck) P. Henn.

*Boletus gracilis* Peck, Ann. Rep. N. Y. State Mus. 24: 78. 1872.

This is usually a small plant, of slender habit, occurring in woods on the ground or on much decayed logs or stumps. It sometimes attains a diameter of 6 cm., but is easily distinguished, even when of maximum size, by its subferruginous spores. The type specimens were collected near Garrisons, New York; it has since been collected in Nova Scotia, New England, New York, Pennsylvania, West Virginia, North Carolina, Georgia, and a few other eastern states.

4. *Tylopilus alboater* (Schw.)

*Boletus alboater* Schw. Schr. Nat. Ges. Leipzig 1: 95. 1822.

*Boletus nigrellus* Peck, Ann. Rep. N. Y. State Mus. 29: 44. 1878. (Type from Sandlake, New York.)

This species is not often collected, but is easily recognized when once seen. It occurs in open deciduous woods in the eastern United States from New York to Mississippi. The type collection was made in North Carolina, and the description was evidently drawn from young plants before the white tubes had been colored by mature spores.

10. *Suillellus* gen. nov.

Hymenophore annual, terrestrial, centrally stipitate; surface glabrous or nearly so, dry or slightly viscid: context white or yellow, fleshy, very firm, considered poisonous; tubes usually free, small, yellowish within, their mouths closed when young, and red or orange from the first, not covered with a veil: spores oblong-ellipsoid, smooth, yellowish-brown, sometimes with greenish tints: stipe solid, usually reticulated or dotted.

Type species, *Boletus luridus* Schaeff.

- Flesh quickly and distinctly changing to blue when wounded. 1. *S. luridus*.  
 Flesh scarcely changing color when wounded; pileus shining,  
 blood-red; stipe blood-red, conspicuously reticulated. 2. *S. Frostii*.

### 1. *Suillellus luridus* (Schaeff.)

- Boletus luridus* Schaeff. Fung. Bav. 3: pl. 107. 1770.  
*Boletus tuberosus* Bull. Herb. Fr. pl. 100. 1782.  
*Boletus rubeolarius* Bull. Herb. Fr. 326. pl. 490. f. 1. 1791.  
*Boletus Satanas* Rostk. in Sturm, Deutsch. Fl. 5: 97. pl. 31. 1844.  
*Boletus Sullivantii* B. & C. Syll. Crypt. 152. 1856. (Type from Ohio.)  
*Boletus vermiculosus* Peck, Ann. Rep. N. Y. State Mus 23: 130. 1872. (Type from New Baltimore, New York.)  
*Boletus magnisporus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 103. 1874. (Type from Vermont.)  
*Boletus firmus* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 103. 1874. (Type from Vermont.)  
*Boletus Spraguei* Frost, Bull. Buffalo Soc. Nat. Hist. 2: 103. 1874. (Type from Vermont.) Not *B. Spraguei* B. & C. 1872.  
*Boletus subvelutipes* Peck, Bull. N. Y. State Mus. 2: 142. 1889. (Type from New York.)  
*Boletus Underwoodii* Peck, Bull. Torrey Club 24: 145. 1897. (Type from Alabama.)  
*Boletus chamaeleontinus* Atk. Jour. Myc. 8: 112. 1902. (Type from Cayuga Lake, New York.)

This species is abundant, widely distributed, and exceedingly variable, especially in the color of the cap and in the surface characters of the stem. I have usually found it on clay banks or roadsides in open deciduous woods, but it has been reported from many different habitats. It has been generally considered poisonous, and should be regarded at least as suspicious.

### 2. *Suillellus Frostii* (Russell)

- Boletus Frostii* Russell; Frost, Bull. Buffalo Soc. Nat. Hist. 2: 102. 1874. (Type from Vermont.)  
*Boletus alveolatus* B. & C.; Frost, Bull. Buffalo Soc. Nat. Hist. 2: 102. 1874. (Type from New England.)

This very handsome species was collected by Frost in considerable quantity near Brattleboro, Vermont, and is known to occur sparingly also in Connecticut, New York, New Jersey, Pennsylvania, District of Columbia, Tennessee, and Indiana. Its favorite habitat is thin oak woods, where the light is sufficient to enable grass to grow. Specimens collected by Sprague were returned by Berkeley under the name *B. alveolatus* B. & C., which was published by Frost with a description. Meanwhile, Berkeley had decided that the plant was only a form of *B. edulis* (Grevillea 1: 36. 1872.)

#### DOUBTFUL SPECIES

*Boletus parvus* Peck, Bull. Torrey Club 24: 145. 1897. Described from specimens collected by L. M. Underwood in grassy woods near Auburn, Alabama. I have been unable to find the types of this species either at Albany or New York.